



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/514,408	06/08/2005	Douglas A. Doers	025234-9003	6863
23409	7590	02/28/2007	EXAMINER	
MICHAEL BEST & FRIEDRICH, LLP			LOPEZ, FRANK D	
100 E WISCONSIN AVENUE				
Suite 3300			ART UNIT	PAPER NUMBER
MILWAUKEE, WI 53202			3745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/514,408	DOERS, DOUGLAS A.
	Examiner	Art Unit
	F. Daniel Lopez	3745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 04 December 2006.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-6,8-12,14-16 and 18-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) 1-6,8-12 and 14-16 is/are allowed.

6) Claim(s) 18-23 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____

5) Notice of Informal Patent Application

6) Other: _____

Response to Amendment

Applicant's arguments filed December 4, 2006, have been fully considered but they are not deemed to be persuasive.

Applicant's arguments with respect to claims and have been considered but are deemed to be moot in view of the new grounds of rejection. The new grounds of rejection are necessitated by the added limitation of the bearing surface extending substantially the entire width of the piston.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

Claims 15-20 are rejected under 35 U.S.C. § 103 as being unpatentable over Gaiser et al in view of Ribeiro et al, Zhu et al, Guenther, Burnand and Hazen et al. Gaiser et al discloses a piston comprising a crown (76) welded to a skirt (78); wherein the crown has a lower surface facing an upper surface of a top portion of the skirt, defining an annular lubrication cavity (42); the skirt having a cylindrically shaped wall portion extending from the top portion, defining a skirt cavity (72); wherein the top portion includes a lower surface defining a bearing surfaces (58), extending inwardly from diametrically opposed circular openings, for a wristpin; wherein the top portion includes two inlet holes (80) communicating between the skirt and lubricating cavities, to supply lubricant from the skirt cavity to the lubrication cavity, and two lubrication holes (90), communicating between the lubrication and skirt cavities, to supply lubricant from the lubrication cavity to the bearing surface; wherein a central cavity (54) is defined by the lower surface of the crown and side surfaces of the top portion of the skirt; wherein the central cavity communicates with lubrication cavity by two bypass holes (86); and wherein the central cavity is open at the bottom to allow the central cavity to communicate with the skirt cavity and for a connecting rod (52) to fit within the central cavity; but does not disclose that the central cavity is defined by the upper surface of the top portion, with a central lubrication hole allowing the central cavity to communicate with the skirt cavity; that the central cavity includes internal threads which engages a

threaded boss of the crown or the top portion, to join the crown to the skirt; or that the bearing surfaces is a bearing surface extending across substantially the entire width of the skirt, such that it extends from one of the openings to the other opening.

Ribeiro et al teaches, for a piston comprising a crown (12) welded to a skirt (14); wherein the crown has a lower surface facing an upper surface of a top portion of the skirt, defining an annular lubrication cavity (62); the skirt having a cylindrically shaped wall portion extending from the top portion, defining a skirt cavity (80); wherein the top portion includes a lower surfaces defining a bearing surface (100) for a wristpin; wherein a central cavity (68) is defined by the lower surface of the crown and side surfaces of the top portion of the skirt; wherein the central cavity communicates with lubrication cavity by two bypass holes (70); that the central cavity is defined by the upper surface (88) of the top portion, with a central lubrication hole (72) allowing the central cavity to communicate with the skirt cavity; wherein a connecting rod can be fitted below the central cavity (see fig 3).

Zhu et al teaches, for a piston (fig 4) comprising a crown (202) welded to a skirt (204); wherein the crown has a lower surface facing an upper surface of a top portion of the skirt, defining an annular lubrication cavity (222); the skirt having a cylindrically shaped wall portion extending from the top portion, defining a skirt cavity (227); wherein the top portion includes a lower surfaces defining a bearing surface (221a) for a wristpin; wherein a central cavity (220) is defined by the lower surface of the crown and side surfaces of the top portion of the skirt; wherein the central cavity communicates with lubrication cavity by two bypass holes (223); that the central cavity is defined by the upper surface (206d) of the top portion, with a central lubrication hole (206e) allowing the central cavity to communicate with the skirt cavity, for the purpose of containing a certain volume of oil in the central cavity, to cool an upper wall of the central cavity (column 4 line 45-54).

Since Gaiser et al, Ribeiro et al and Zhu et al are all from the same field of endeavor, the purpose disclosed by Zhu et al would have been recognized in the pertinent art of Gaiser et al. It would have been obvious at the time the invention was made to one having ordinary skill in the art to define the central cavity of Gaiser et al by

the upper surface of the top portion, with a central lubrication hole allowing the central cavity to communicate with the skirt cavity, as taught by Ribeiro et al, for the purpose of containing a certain volume of oil in the central cavity, to cool an upper wall of the central cavity, as taught by Zhu et al.

Guenther teaches, for a piston comprising a crown (11) joined to a skirt (5); wherein the crown has a lower surface (21) facing an upper surface of a top portion of the skirt, defining an annular lubrication cavity; the skirt having a cylindrically shaped wall portion extending from the top portion, defining a skirt cavity (below 32); wherein the piston includes a bearing surface (27), extending inwardly from diametrically opposed circular openings, for a wristpin (13); wherein a central cavity (where 46 and 48 meet) is defined in the piston; wherein the central cavity communicates with lubrication cavity by bypass holes (48); that the bearing surface is a single bearing surface extending across substantially the entire width of the skirt, from one of the openings to the other opening and wherein the central cavity communicates with the bearing surface to lubricate the wristpin.

Burnand teaches, for a piston comprising a crown (52) joined to a skirt (54); wherein the piston includes a bearing surface (27) for a wristpin (13); that the bearing surface is a single bearing surface extending across substantially the entire width of the skirt, for the purpose of spreading the load of the piston along the entire wristpin, thereby avoiding a bending moment on the pin (column 1 line 35-40).

Since Gaiser et al, Guenther and Burnand are all from the same field of endeavor, the purpose disclosed by Burnand would have been recognized in the pertinent art of Gaiser et al. It would have been obvious at the time the invention was made to one having ordinary skill in the art to make the bearing surfaces of Gaiser et al a single bearing surface extending across substantially the entire width of the skirt, from one of the openings to the other opening; wherein the central cavity communicates with the bearing surface to lubricate the wristpin, as taught by Guenther, for the purpose of spreading the load of the piston along the entire wristpin, thereby avoiding a bending moment on the pin, as taught by Burnand.

Hazen et al teaches, for a piston comprising a crown (1) joined to a skirt (2); wherein the crown has a lower surface facing an upper surface of a top portion of the skirt, defining an annular lubrication cavity (11); the skirt having a cylindrically shaped wall portion extending from the top portion, defining a skirt cavity (within 18); wherein the top portion includes a lower surfaces defining a bearing surface (4) for a wristpin; wherein a central cavity (20) is defined by the lower surface of the crown and upper surface of the top portion of the skirt; wherein the central cavity communicates with lubrication cavity by bypass holes (22); that the central cavity includes internal threads (7) which engages a threaded boss (8) of the crown, for the purpose of joining the crown to the skirt.

Since the weld joint between the crown and skirt of the modified Gaiser et al and the threaded joint between the crown and skirt of Hazen et al are interchangeable in the piston art, it would have been obvious at the time the invention was made to one having ordinary skill in the art to replace the weld joint of the modified Gaiser et al with a threaded joint, wherein the central cavity includes internal threads which engages a threaded boss of the crown, as taught by Hazen et al, as a matter of engineering expediency.

Claims 21-23 are rejected under 35 U.S.C. § 103 as being unpatentable over Gaiser et al in view of Ribeiro et al, Zhu et al, Guenther, Burnand and Hazen et al, as applied to claim 20 above, and further in view of Zhu et al. The modified Gaiser et al discloses all of the elements of claims 21-23, including that the top portion includes first and second lubrication holes (90), communicating with an annular cavity (42), on opposite sides of the central lubrication hole, and communicating with the bearing surface; with a plane including a central axis of the piston, a longitudinal axis of the bearing surface and the central lubrication hole; but does not disclose that the first and second lubrication holes are in the plane; or that a diameter of the first, second and central lubrication holes is 0.125 inches.

Zhu et al teaches, for a piston (fig 2) comprising a first lubrication hole (unnumbered, near 106d) connected between an annular lubrication cavity (112) and a bearing surface (121a) for a wristpin; wherein a plane includes a central axis of the piston, a longitudinal axis of the bearing surface and a central lubrication hole; that the first lubrication hole is in the plane.

Since the placement of the first lubrication hole of the modified Gaiser et al and Zhu et al are interchangeable in the piston art, it would have been obvious at the time the invention was made to one having ordinary skill in the art to locate the first and second lubrication holes of the modified Gaiser et al in the plane, as taught by Zhu et al, as a matter of engineering expediency.

One having ordinary skill in the art would recognize that pistons come in a variety of sizes, and that the lubrication holes would be sized appropriately. Therefore, it would have been obvious at the time the invention was made to one having ordinary skill in the art to make a diameter of the first, second and central lubrication holes of the modified Gaiser et al 0.125 inches, as a matter of engineering expediency.

Conclusion

Claims 1-6, 8-12, 14-16 are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Lopez whose telephone number is 571-272-4821. The examiner can normally be reached on Monday-Thursday from 6:15 AM -3:45 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Look, can be reached on 571-272-4820. The fax number for this group is 571-273-8300. Any inquiry of a general nature should be directed to the Help Desk, whose telephone number is 1-800-PTO-9199.



F. Daniel Lopez
Primary Examiner
Art Unit 3745
February 23, 2007